TOP GREEN IT ORGANIZATIONS

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Hard-wired to be GREEN

At these 12 organizations, reducing power demands and using technology to **create energy efficiencies** is ingrained in the culture.

Also inside: A Data Center Gets Extra Toasty | Managing Information Age Fears

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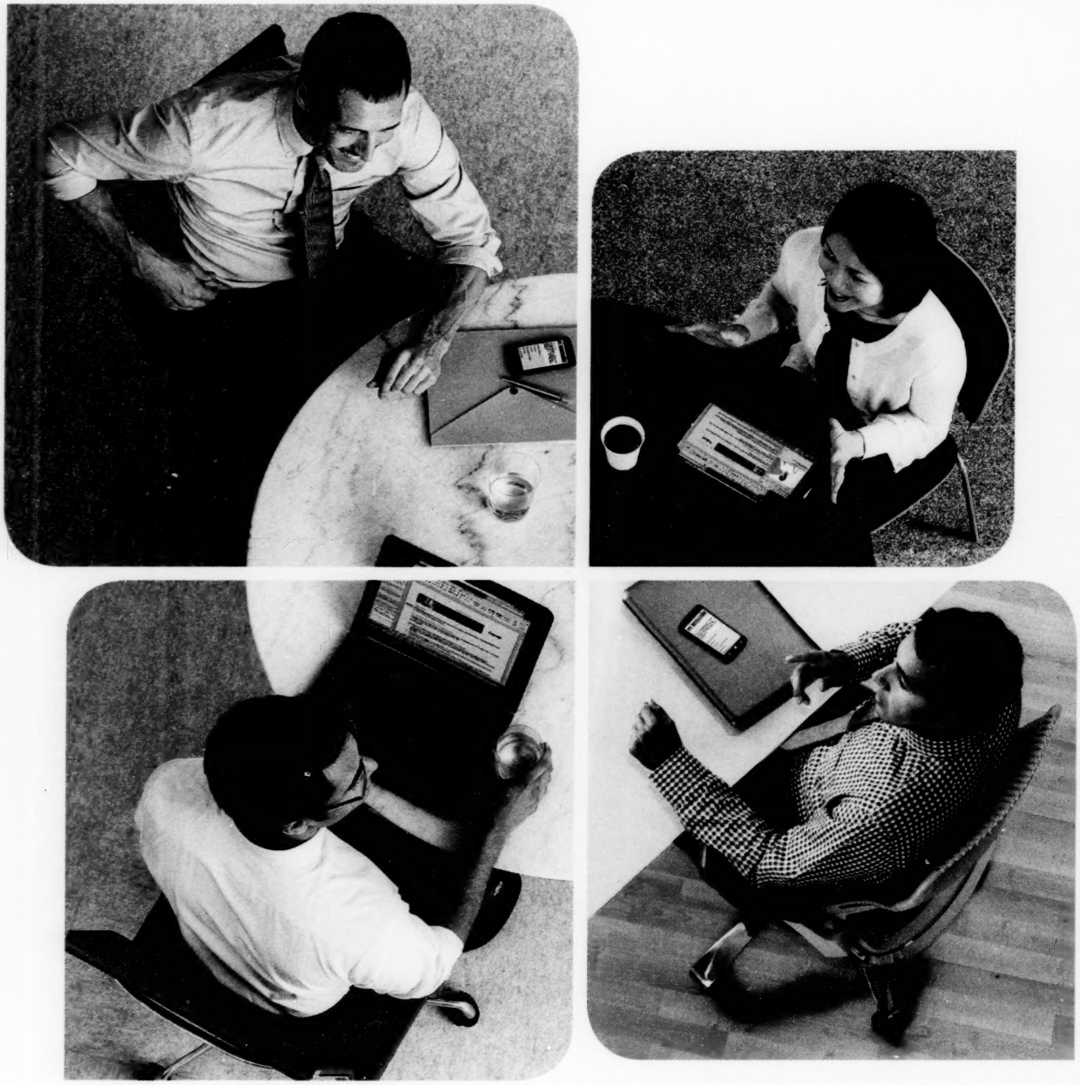

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» Solar panels provide a portion of the power needed to run Prudential's Roseland, N.J., data center.

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TOP GREEN-IT ORGANIZATIONS

SPECIAL REPORT

Hard-wired to Be Green

17 Our fourth annual Top Green-IT issue showcases the achievements at 12 IT departments that are reducing power demands and using technology to create energy efficiencies. These teams were chosen from 70 applicants for their efforts to better control their carbon footprints.

WINNER PROFILES | 18 Kaiser Permanente claimed the top spot on this year's list. Teams of green-IT staffers (including those pictured at right) crank out dozens of initiatives to save power and money. Read all 12 profiles.

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HeadsUp

Cray is building a 20-petaflop supercomputer for the Department of Energy's Oak Ridge National Laboratory (pictured here), which will use the system for nuclear and climate simulations.

U.S. DEPARTMENT OF ENERGY

SUPERCOMPUTERS

Cray to Build 20-Petaflop System

THE GLOBAL RACE for ever-faster supercomputers is getting a new entry. Cray announced this month that it won a contract from the U.S. Department of Energy's Oak Ridge National Laboratory to build a system capable of up to 20 petaflops of peak performance. The deal is worth more than $97 million, the company said.

The new system, called Titan, is expected to be completed by 2013. It's a major upgrade of Oak Ridge's existing Jaguar supercomputer, which was also built by Cray and tops out at 2.33 petaflops. Each compute node on the Jaguar has two AMD Opteron processors.

The Titan system will include graphics processing units (GPU) as well as CPUs. The project involves removing one of the Opteron processors on each Jaguar node and replacing it with an Nvidia GPU. The new system will include up to 18,000 GPUs.

"We see this as a step toward the next kind of large system, which is obviously going to be 100 petaflops," said Sumit Gupta, manager of Nvidia's Telsa GPU business.

GPUs have been considered mostly experimental in supercomputing, said Steve Conway, an IDC analyst.

Oak Ridge said researchers will use Titan for "increasing the realism of nuclear simulations" and "improving the predictive power of climate simulations," among other things.

IBM is also building a 20-petaflop supercomputer, the Sequoia, which is due to be completed next year. Today's fastest computer is Japan's K computer, an 8-petaflop system.

– Patrick Thibodeau

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STORAGE

New Low-Power Memory Could Challenge DDR3

Samsung Electronics and Micron Technology have founded a consortium to push a type of low-power memory called Hybrid Memory Cube. The vendors hope HMC will be seen as a viable alternative to DDR3 memory in high-performance computers and networks within a few years.

The consortium is planning to unite device and chip makers to develop an open specification for HMC, which promises to offer better power consumption and performance than current DRAM technologies, including DDR3, the vendors said.

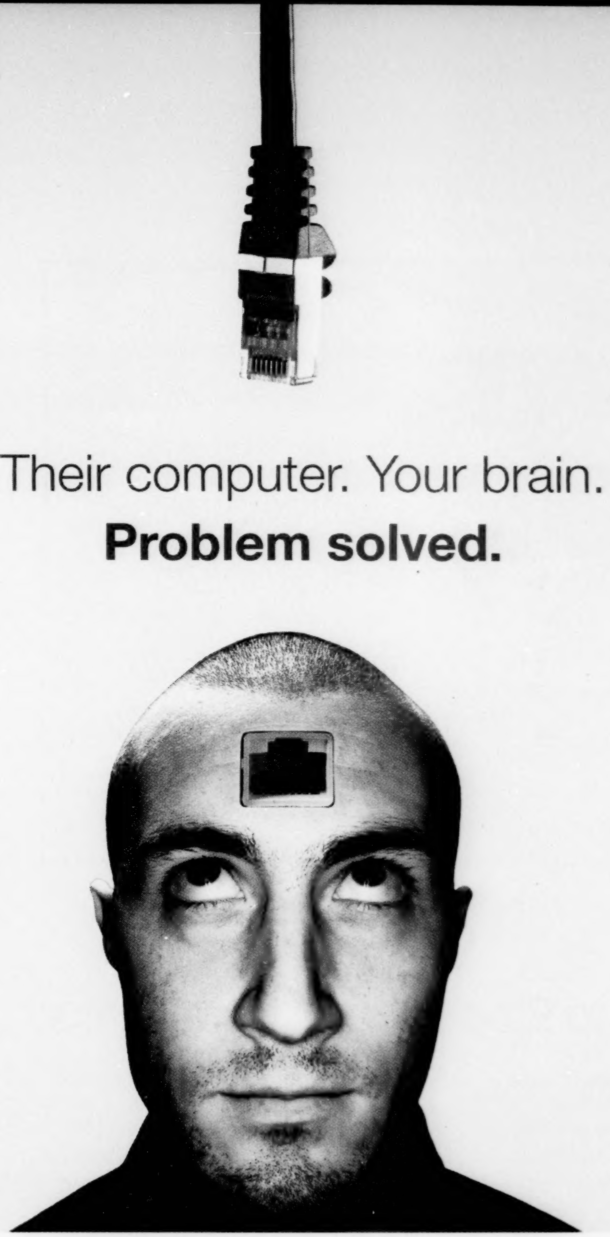
Scott Graham, general manager of Micron's DRAM solutions group, said initial HMC specifications should be ready next year and full-scale production could begin in 2015.

Intel demonstrated HMC last month in an experimental solar-powered computer. The chip maker said the technology was seven times more power-efficient than existing DDR3 memory.

Mike Howard, an analyst at IHS iSuppli, said one HMC unit could potentially replace 10 DDR3 memory modules in servers. "It makes the memory operate faster and smarter," he said.

Altera and Xilinx are in the consortium. Intel and other CPU makers are not yet members, but they have been invited to join, said Graham.

– AGAM SHAH,
IDG NEWS SERVICE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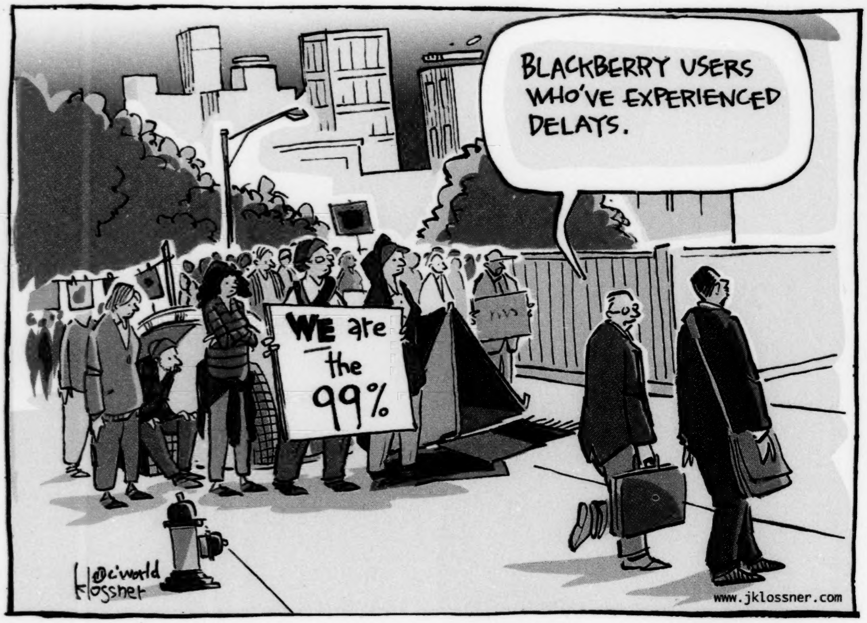
By John Klossner



SECURITY

Obama Aims to Stop Federal Data Leaks

PRESIDENT OBAMA has issued an executive order aimed at better securing data stored by federal agencies.

Some industry watchers believe the move is a response to the whistle-blower organization WikiLeaks, which has published information provided by Bradley Manning, a relatively low-level Army intelligence officer who last year downloaded thousands of documents from secure networks and handed them over to WikiLeaks.

Obama's order focuses on creating committees and task forces to oversee access to classified networks and government data.

The order requires the heads of all federal agencies to appoint a senior official to oversee measures for controlling and monitoring access to classified information. The chosen officials will also establish an insider threat detection and prevention program, as well as supervise their respective agencies' compliance with new policies and standards governing access to and use of classified data.

A new Information Sharing and Safeguarding Steering Committee will coordinate new interagency policies and standards for safeguarding classified information. The committee will be co-chaired by an executive from the White House Office of Management and Budget and will include representatives from the State, Justice and Homeland Security departments, as well as officials from the CIA and other agencies.

Eddie Schwartz, chief security officer at RSA, EMC's security division, said that after the WikiLeaks incident, many agencies scrambled to implement safeguards. The result was a hodgepodge of standards and procedures to protect classified data, plus differences in the degrees of diligence devoted to such efforts.

"What the administration is saying is this is a matter for all of us," said Schwartz.

The order also calls for an interagency task force that will create governmentwide policies for detecting and mitigating threats.

– Jaikumar Vijayan

Micro Burst

Revenue taken in by social networking sites will rise 41% this year, reaching

$10.3B

– even though marketing execs are still figuring out how to use the new media.

SOURCE: EMARKETER INC.

MOBILE & WIRELESS

FCC to Retailers: Stop Selling Phone Jammers

The Federal Communications Commission has issued warnings to 20 online retailers to stop selling illegal signal-jamming devices, including mobile phone, GPS and Wi-Fi jammers. The sale and use of devices that jam the signals of authorized radio communications are illegal in the U.S., the FCC said, adding that it will "vigorously" prosecute violations from now on.

"Our actions should send a strong message to retailers of signal-jamming devices that we will not tolerate continued violations of federal law," Michele Ellison, chief of the FCC's enforcement bureau, said in a statement. "Jamming devices pose significant risks to public safety and can have unintended and sometimes dangerous consequences for consumers and first responders."

Jammers, which are sometimes used in theaters, churches and classrooms to avoid disruptions, can prevent people from contacting police and fire departments or family members in an emergency, according to the FCC.

If a retailer receives a second FCC warning, it could face fines from $16,000 to more than $110,000.

– GRANT GROSS, IDG NEWS SERVICE

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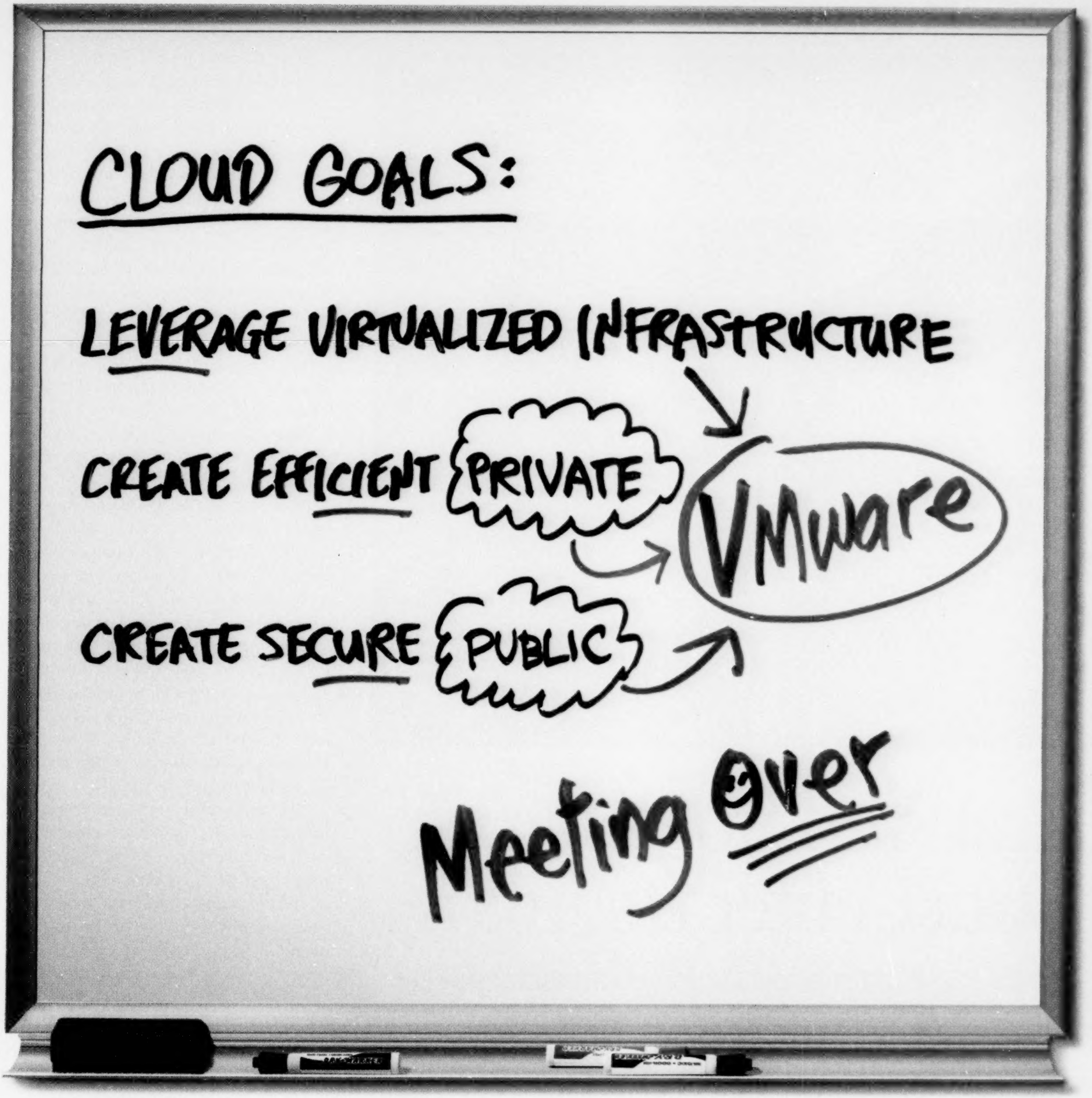

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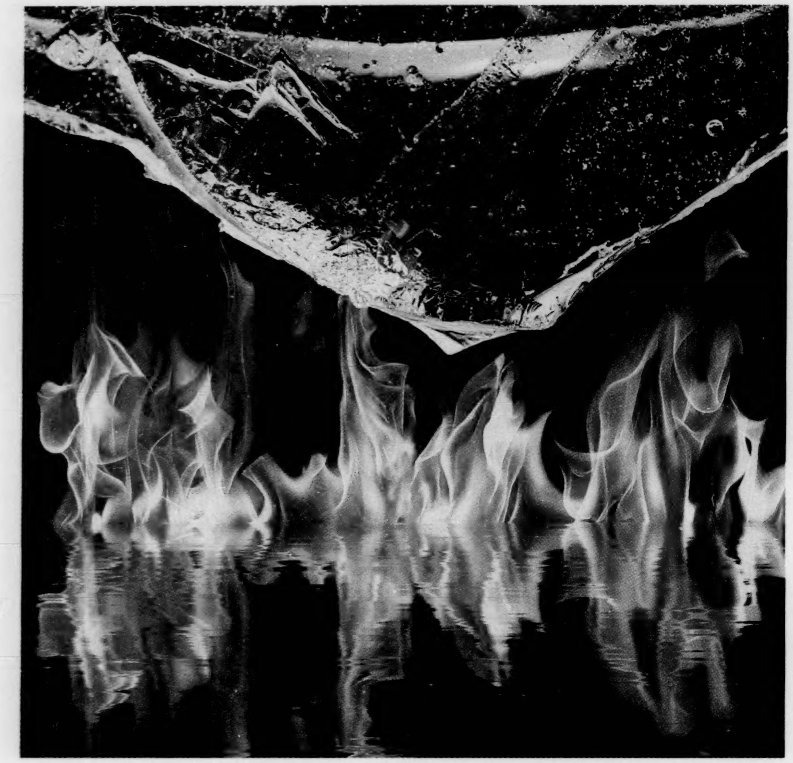

Test Aims to Disprove Data Center Dogma

A Trinity Health IT engineer keeps systems that reside in a generator shed running, despite fluctuating temperatures and dusty conditions. By Patrick Thibodeau

SINCE JANUARY, David Filas, a data center engineer at Trinity Health, has been running decommissioned servers, networking gear and storage systems in a simple generator shed on the grounds of the healthcare provider's headquarters in Novi, Mich.

Filas hopes that by January 2012, this project will have convinced his colleagues that IT equipment isn't as fragile as they think it is.

So far, the equipment has stayed up and running, enduring Michigan's wide seasonal variations in temperature and humidity levels, Filas said at the Afcom data center conference in Orlando last month.

Like their counterparts at other organizations, IT administrators at Trinity Health, which runs 47 hospitals and other facilities in 10 states, are reluctant to raise temperatures in data centers. But Filas said he wants his staff to be more comfortable with higher temperatures. "They get nervous when I dial up the temperature, even to the mid-70s," he said. "I'm trying to dispel the myth among my own staff that it has to be [65 degrees], because it doesn't."

Filas is hoping to show that IT equipment can safely run at inlet temperatures as high 82 degrees Fahrenheit.

Increasing data center temperatures can have a big payoff, said Rick Tinucci, executive vice president of Bick Group, a data center consultancy. A 1-degree increase in the temperature of a 5,000-square-foot data center with 200 tons of cooling (one ton equals 12,000 BTUs) would cut annual energy costs by $30,000, based on a power rate of 0.10 cents per kilowatt-hour, the national average, he said. "Even at 0.05 cents [per] kwh, the savings for a 1-degree temperature adjustment is significant," Tinucci added.

Filas said a block heater on the generator running the test systems provides some warmth, but otherwise, the equipment is exposed to outdoor conditions.

The temperature inside the shed has ranged from 31 degrees to nearly 105 degrees, and the relative humidity has gone from about 8% to 83%. Filas added that the shed's door has been accidentally left open a few times, including once when the temperature fell to 5 degrees below zero.

Filas even tossed sawdust into the shed to show that systems can handle dust. "Today's electronics are extremely resilient," he said.

About a dozen pieces of equipment, including HP servers, Cisco switches and an IBM disk array, are part of the test.

Filas said he might extend the experiment beyond January 2012 and add new parameters to address criticism that the current setup is not a true test. For instance, he's considering networking all the equipment and putting it under a heavy load. ◆

> I'm trying to dispel the myth among my own staff that [the data center has to be 65 degrees].
>
> DATA CENTER ENGINEER, TRINITY HEALTH

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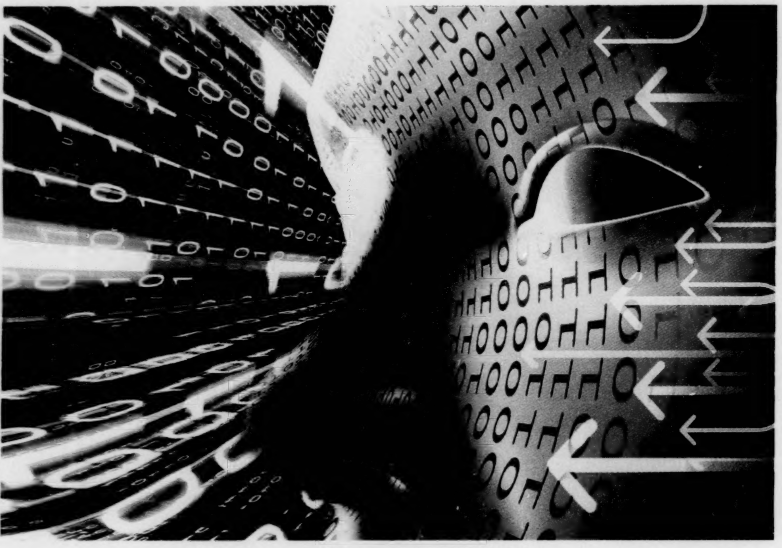

FOTOLIA / CARLOS CASTILLA

Software Development Still a Risky Business

Despite technology breakthroughs over the years, software development remains costly and error-prone. Some experts say that's mostly a people problem. By Patrick Thibodeau

THE DATA about software development projects is sobering — as it has been for decades. Too many projects still end up way over budget and behind schedule.

A Standish Group study of some 10,000 software projects found that 21% of them had failed, meaning they weren't completed or were rejected by the customer.

About 37% of the projects in the study were deemed successful: They came in on time and within budget, and users accepted the result. Another 42% were found to be challenges: They were late, over budget, not meeting users' needs, or all of the above, according to the report issued earlier this year.

The stakes involved in getting software projects right can be huge, and companies are constantly seeking new ways to avoid costly failures.

To untangle messed-up million-dollar-plus projects. IT executives sometimes turn to individuals like Billie Blair, an organizational psychologist and CEO of consulting firm Change Strategists Inc.

Blair contends that dysfunction in failing software projects usually originates with a project manager.

"Anything that goes awry in a company can always be traced back to the manager," she said.

Often, a project manager isn't ready for the job at hand. Many managers are engineers, IT professionals or highly skilled software developers who were promoted under the mistaken belief that if a person has good technical skills, "it follows that they will be a good manager," Blair said.

The people issues in software development are getting more attention with the increased use of agile processes, which emphasize communication, collaboration, rapid production of code and frequent feedback among all members of development teams.

At Landmark Graphics, a user of agile processes, there's a focus on creating a workplace culture that emphasizes highly collaborative teams, said Todd Little, a senior development manager at the company.

Collaboration is important in a process designed to constantly deliver working software "that's available for discovery," he said.

Little compared the constant review of agile projects to the traditional waterfall software development method, where "it's only at the end that you discover you have a real problem."

If there's a problem in an agile development project, "very rarely are they technical challenges," Little said. "Almost always, the challenges are with people."

Barry Boehm, director of the University of Southern California Center for Systems and Software Engineering, noted that while the agile process can get a project fielded early and evolve it as needed, it does have "some failure modes."

One problem is what Boehm called "easiest first," or "technical debt," which means that a developer, seeking to please users and customers, may put everything in main memory. "The thing performs like a flash, and the users love it" — until the main memory is filled, he said. "[Then] you have an architectural breaker."

Boehm added that developers sometimes hold off on adding security features until it's too late, having already put in too many insecure features.

He agreed, however, that agile methods work well for smaller projects, as well as ones where requirements are rapidly changing, especially "in an organization where people feel comfortable or empowered." ◆

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>
> [illegible], CEO, CHANGE STRATEGISTS

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THE Grill

Linglong He

This engineer paired her tech talents with an eye for business to land the top IT job.

Best part about being CIO? Seeing the technology impact on the business from the big picture, and seeing the teams work together.

Worst part about being CIO? I enjoy every single minute of it, but I've spent less time with my family than I'd like.

Family snapshot? Husband, Charles Chen, who also works in technology, and three children, ages 16, 12 and 4.

Favorite technology? Natural user interface (NUI).

Advice you give your staff? Believe in yourself and be yourself. And carry your own sunshine. And enjoy your achievement every day.

PHOTOGRAPHY BY AARON EMERSON / QUICKEN LOANS

LINGLONG HE *stepped into the CIO role at Quicken Loans in 2010, taking over the top IT spot at a company continually ranked by* Computerworld *and others as a great place to work. She came to the post with an impressive list of accomplishments. In China, she earned an undergraduate degree in civil engineering from Hehai University and a master's degree in civil engineering from Wuhan University, where she taught civil engineering for seven years. She immigrated to the U.S. in 1991. After earning another master's degree in software engineering from the University of St. Thomas in Minnesota, she made a career in IT. In 1996, she joined Quicken Loans, where she worked in various roles, from business analyst to director of database and systems engineering, until she came into her current role. Here she talks about her work, her leadership and what it takes to sustain a top-rated work environment.*

Continued on page 12

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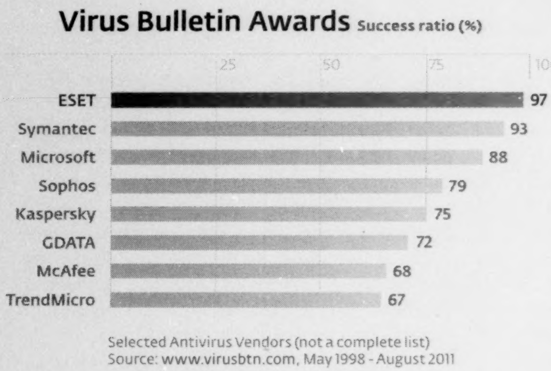

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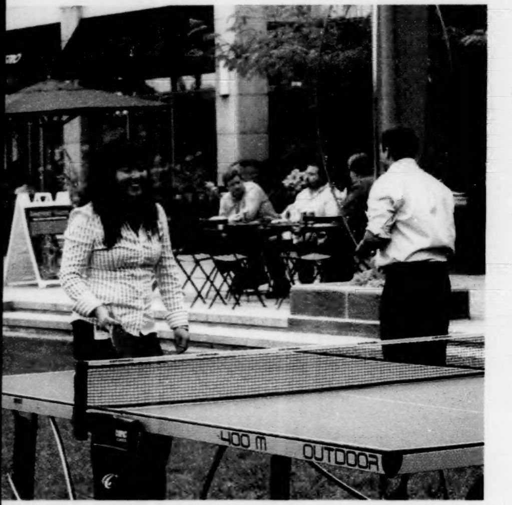

> **You have to encourage people in a positive way,** and you can't overlook an area that needs improvement, so you hold them accountable.

Continued from page 10

You rose up through the IT ranks. What was your biggest lesson as you became an executive? Know your business, know the impact of the technology to the business — that's the lesson. At Quicken Loans, I was in different roles — a database administrator, engineer, team leader — and in the engineer world, you're more focused on a task. As a CIO today, I see the big picture; I see what the outcome of the technology is and how it applies to the business, how it drives the business. We sometimes call ourselves a technology company, not a mortgage company, so we compare ourselves to Google and other technology companies to see how fast the technology can drive our business. We try to leverage the tools to move faster.

How did you prepare for your growth from engineering and IT positions to management and executive roles? I want to be honest with you: I was not intentionally preparing for the executive role. But I usually served as technical lead on a team, so I was there to support them from a technical point of view as well as a personal point of view. I also took initiative and ownership and lived by integrity and persistence. I believe I have the nature to make a decision, even in a crisis mode. I'm not afraid to make a decision. And I [have] read a lot of leadership books and listened to leadership tapes.

So do you groom your own staff to move into management positions? Absolutely. Our company does a great job on that. We develop and mentor people. In IT, we have, every other week, a roundtable discussion on hot topics, like how to handle different personalities, so we have a recurrent meeting for leaders. And for myself, I hold regular meetings with my VPs, and I conduct quarterly meetings with the entire leadership team — 50 or 60 people — talking about principles and expectations for leaders. I enjoy seeing people grow.

You taught civil engineering for seven years. How does that experience compare to management? I think as a leader it's the same as a teacher, same as a parent: You have to encourage people in a positive way, and you can't overlook an area that needs improvement, so you hold them accountable. My nickname is Mom because a mom takes care of [people] and makes sure they grow right.

As an online retail mortgage lender, so much of your company's technology faces external customers. What are their top expectations of your technology? They want [our] system to be easy to use [and] convenient and to have a quick response time. The interface has to be friendly, and they want clear communications regarding their loan. [Delivering all that] is an ongoing process. We constantly have a dialogue with our clients for feedback, and on our website, we have a survey to receive feedback. Our technology team is on top of that, so we're trying to constantly meet and exceed those expectations. Any client complaint — I receive the email. Any compliment I receive, too.

What about your internal customers, the Quicken Loans workers that you support? What are their top expectations? There are two kinds of expectations. One is from the infrastructure side, that any production system is up and running. You can't have a system down. And also response time. They want to move fast. If they click a button and wait forever, they're not happy. The other expectation is on the project side. Our internal customers rely on our technology to provide the tools and the expertise, and they rely on us to provide a solution to drive the business. We have so many regulatory requirements, but our technology team automates everything to make sure it happens smoothly.

What recruitment strategies do you use to ensure you're getting the best workers? There are several strategies for doing that. No. 1, we depend on our team members for recruiting. They know who are the best, so we encourage our team members to bring their friends and friends of friends. Also, we promote our people. And we do have a recruiting team, and we belong to several recruiting sites. We use our reputation — we win awards for being a great place to work. They see our office — it's a beautiful place. And they can see in our technological area a ping-pong table, an Xbox to play games — there are just so many attractions. So they want to come work here.

And how do you keep them? Not only by taking care of them from the compensation point of view, but [by] making sure they feel they've achieved something every day. Keep them fulfilled.

— Interview by Computerworld *contributing writer*
Mary K. Pratt *(marykpratt@verizon.net)*

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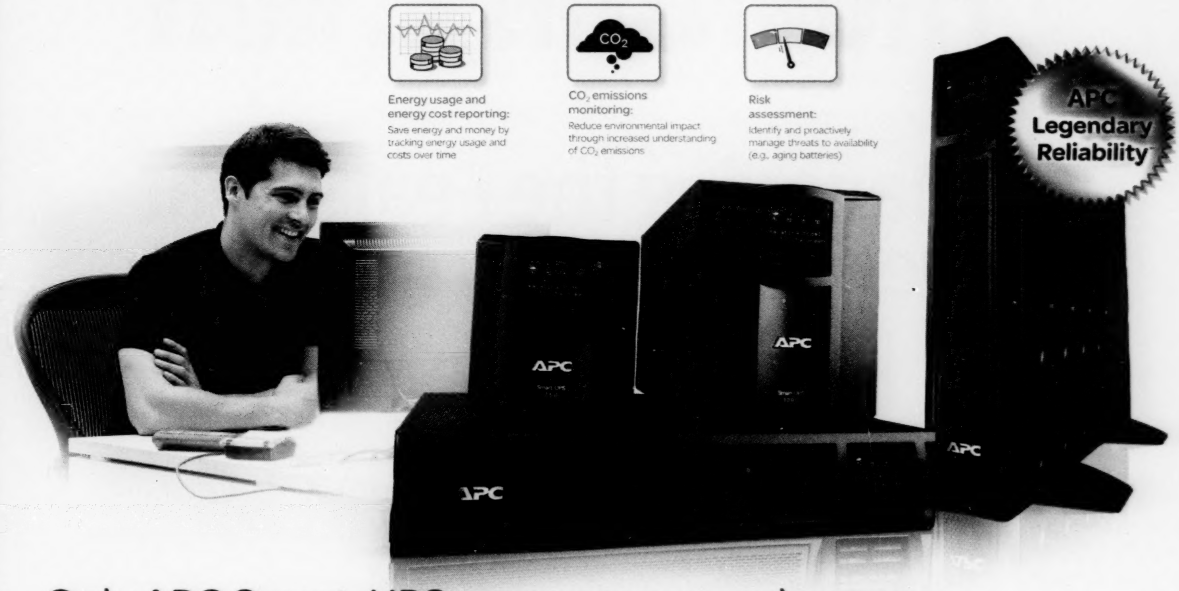

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OPINION

THORNTON A. MAY

Managing the Fears That Define the Information Age

> Failure to embrace new technologies is predicted to doom us to a form of cognitive starvation.

TO A LARGE EXTENT, OUR FEARS DEFINE US. Our earliest bipedal ancestors probably mostly had fears about ingestion — either being eaten or not having enough to eat. The literature and art of the Victorians, as Julie Wosk notes in *Breaking Frame: Technology and the Visual Arts in the Nineteenth Century*, reflected a popular psychosis fixated on fears of being blown up by misengineered technology, being accelerated half out of one's mind on a train or being maimed when a train went off the tracks.

The fears of the information age, however, are different. Many of us tremble at a looming Malthusian wall of ignorance. Thomas Malthus was an 18th century Anglican curate, demographer and political scientist who observed that the population was growing much faster than the food supply and predicted an end state of famine and social unrest.

There are many neo-Malthusians in the "big data" ecosystem who fear that the volume of information that must be known is growing far faster than organizations' capacity to know. Failure to embrace new technologies and new information management practices is predicted to doom us to a form of cognitive starvation.

Lurking behind this fear that what must be known is exceeding our capacity to know lies another fear: that key stakeholders will *know* that we do not know and punish us for it. Some organizations are creatively and courageously stepping up to the realities of a rapidly expanding data set in a big way. Some are not.

One CEO I interviewed believes that many organizations are consumed by that second fear and are overinvesting in coverups. Here's what he has to say about the matter:

"I have accepted the fact that reality is what it is — i.e., there are things we should know that we do not know. Possessing a limited supply of calories, you are going to spend those calories on one of two things: attempting to mask reality, or attempting to change reality into something more like what you want it to be — [so it's] the actual dealing with reality versus the spinning of reality.

"Given that there are a limited amount of calories, I have chosen to devote zero percent of my time to the spinning of reality."

The way England beat its Malthusian crisis was to embrace the technologies that drove the Industrial Revolution. This CEO believes the best way to beat the looming cognitive Malthusian trap is, similarly, to embrace social technologies.

Step 1 on this path is to use social technologies to listen to the customer. For example, anytime a customer says anything about your company, it should be captured and entered into a "customer listening system." That includes feedback collected through company surveys as well as any compliments or complaints that customers post on Twitter, in blogs or anywhere else in the "infocosm." Step 2 is to give the board of directors unfiltered access to the customer listening system.

The person who originally designed and implemented this approach presented his company's case study at a recent conference. There was an audible gasp from members of the audience when they heard that the board of directors had access to live customer data. They couldn't understand why anyone would want to grant such access.

But this is the future. Total transparency. No spin. Don't be afraid of it. Be prepared for it. ◆

Thornton A. May is the author of *The New Know: Innovation Powered by Analytics* and executive director of the IT Leadership Academy at Florida State College at Jacksonville. You can contact him at thorntonamay@aol.com.

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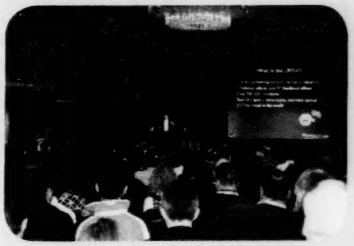

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Hard-wired to be GREEN

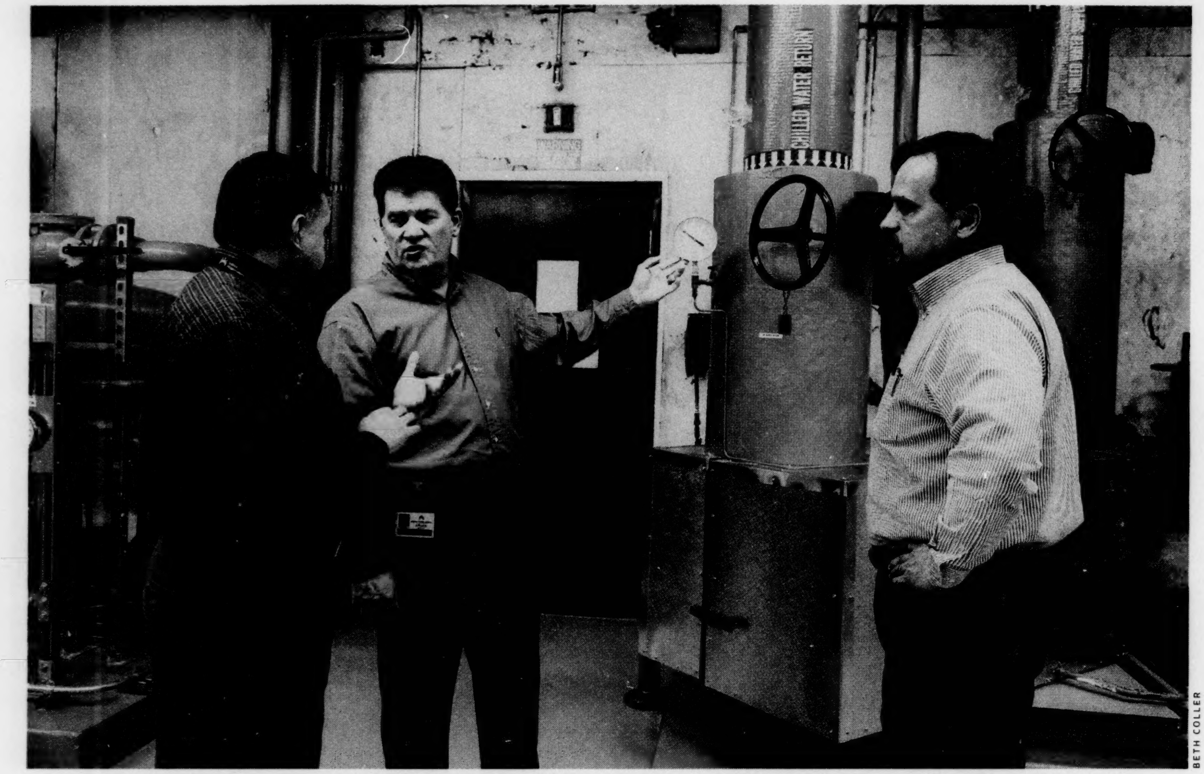
TOP GREEN-IT ORGANIZATIONS

At these 12 organizations, reducing power demands and using technology to **create energy efficiencies** is ingrained in the culture.

- How CIOs can help control e-waste. **Page 34**
- How we picked the winners. **Page 35**

Visit our website to check out the top 12 Green-IT Vendors. **computerworld.com/topgreen11**

ILLUSTRATION BY ELEANOR GROSCH



BETH COLLER

» Kaiser Permanente's green-IT team members at the Napa data center (from left): Eddy Vasquez, Ron Talaska and Steve Press.

1

Kaiser Permanente

This health insurer addressed data center cold spots to earn big savings — and the top spot on our list of green innovators. BY ROBERT L. MITCHELL

A **TAG-TEAM EFFORT** by Kaiser Permanente's data center IT and facilities groups delivered a one-two punch to energy consumption in the company's three data centers this year, cutting an eye-popping 7.2 million kilowatt-hours of power from overall data center operations — and over $770,000 from power budgets. "We are one of the few companies that have the data center facilities team as part of IT," says Steve Press, executive director of data center facilities services, who credits collaboration for the results.

Our focus was: Where do we get the biggest payback?

LAZ GARCIA, VICE PRESIDENT OF DATA CENTER SERVICES, KAISER PERMANENTE

While the Oakland, Calif.-based healthcare company's IT team, led by vice president of data center services Laz Garcia, was virtualizing Unix and Windows server infrastructure, the facilities group, led by Press, re-engineered the raised-floor cooling system. The initiative was launched a few years ago when the company realized that its Corona, Calif., data center was about to run out of power. Press' team came up with its own way to measure cooling system efficiency, called computer room functional efficiency, passing over industry-standard metrics such as PUE and DCIE, which he says were "not granular enough."

"Our focus was: Where do we get the biggest payback?" Garcia says. So his group first turned to big-iron Unix systems such as the P-series, which consumed as much as 100kW per cabinet. For Press, the key was to do a lot of little things that added up. But by measuring results, the team was able to focus efforts in areas that brought the biggest gains. This included steps such as installing variable-speed fans and hot- and cold-aisle containment systems. "We put to work a lot of little tricks, but the biggest win was sealing up air leaks," he says, noting that these efforts allowed Kaiser to shut off 20 computer-room air conditioners in the three data centers.

GREEN TOMORROW

Kaiser Permanente is expanding an internal cloud that automates the provisioning and deprovisioning of virtual servers. The IT team hopes to have a virtual storage environment up and running in six to 12 months and plans to virtualize remote office environments within a year.

Kaiser meters power at the circuit level and has installed wireless environmental sensors at different levels within each rack, in each hot and cold aisle, and in the raised floor to monitor temperature, humidity and static charges. The data feeds a computational fluid dynamics model that runs continuously. The payoff: Kaiser knows exactly where to look for big savings.

"We learned that the first place to address are the cold spots," says Press. "If you take care of places being overcooled, the hot spots take care of themselves." Many of the ideas for power savings came from Kaiser's Keep IT Green teams. The groups of IT staffers, which meet monthly, generated nearly 50 initiatives.

Cabinets are now ordered with blanking plates installed (which Press says is "easier than trying to put them in after the fact"); monthly generator test runs pick up the chiller load while operating; and every piece of hardware is tested to compare its actual power consumption with what's on the faceplate. Most equipment consumes about half the rated amount, so by testing, Press' team can avoid overprovisioning power distribution and cooling infrastructure.

Kaiser's data centers have gone green in other ways as well. Utensils in food areas are biodegradable; people discard them in compost bins. And a new landscaping design at the Corona facility is expected to save 2 million gallons of water per year. These and other ideas originated with both the Keep IT Green teams and green communities on the company's internal social network, Ideabook.

Although Kaiser's IT group expects to cut overall energy consumption by 6% this year, work in the data centers is far from complete. The Napa data center, which Kaiser hopes will earn a LEED Platinum certification once a redesign is completed, will be cooled using outside air by way of water- and air-side economizers. And virtualization efforts are continuing, with 65% of Unix servers and about 20% of Windows servers currently virtual. "There's still a lot of gains to be had," Garcia says. ◆

COMPUTERWORLD'S TOP GREEN-IT ORGANIZATIONS

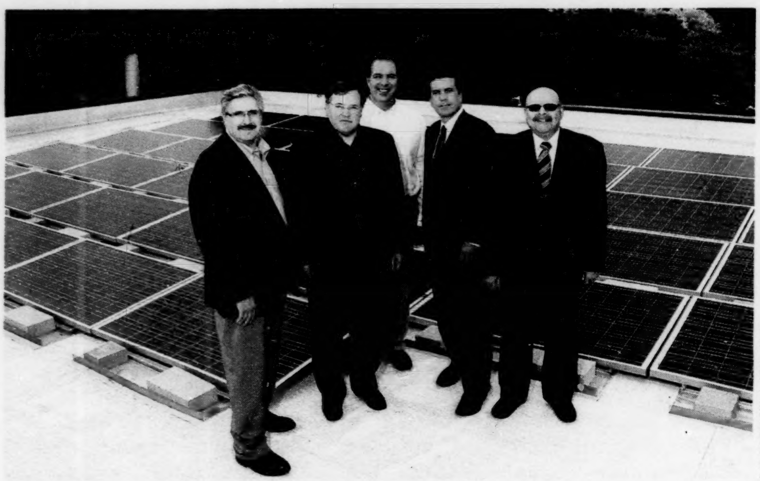
COMPUTERWORLD'S top 12 green-IT organizations were chosen from a group of 70 applicants, each striving to find new ways to reduce energy consumption in their IT equipment and use technology to better manage their carbon footprints.

In fact, these organizations have woven energy-saving initiatives into the very fabric of their IT strategies. They are tapping the collective brainpower of their IT staffs to capitalize on existing technologies, such as virtualization, telepresence and solar arrays, while seeking out new methods for improving carbon footprint management.

NBC Universal CIO Christopher Furst may have said it best: "It's hard work. There's no silver bullet. It's something you have to work on every day."

And every day, these organizations are finding new ways of reaching their goals. At Kaiser Permanente (*story at left*), the IT team came up with its own method of measuring cooling system efficiency. Allstate Insurance (*page 22*) uses the philosophy that if the idea makes sense and can save money, the IT team will give it a shot.

It's that sort of determination that defines this year's top 12 honorees. Read their stories to find ways to conserve energy, save money and improve IT energy efficiencies at your organization. ◆



JIM GORALSKI / KPMG LLP

» **KPMG's green-IT team includes (from left) Dominick Regina, CIO Dick Anderson, John Reina, Chris Gallo and Fred Fernandez.**

2

KPMG

By employing everything from virtual servers to solar panels, this Big Four accounting firm gets greener every year.

BY BOB VIOLINO

IN THE PAST 18 MONTHS, the IT group at KPMG has helped update and create new processes and workflows for the company's paper-, energy- and carbon-intensive systems.

These efforts included raising the ambient temperature in the data center to improve efficiency by more than 5%, raising the temperature of the water in the cooling tower to improve efficiency by 5% and migrating to blade server technology, with the average blade server consuming about 50% less power than a comparably configured rack-mounted server.

The New York-based audit, tax and advisory services firm is also in the midst of a data center transformation, incorporating an older, inefficient data center into its main facility. With this consolidation, KPMG anticipates saving about 15% in energy costs.

"At KPMG, the role of IT is to create new sources of value and improve the productivity of our business teams, using technologies that are powerful, flexible and efficient," says CIO Dick Anderson. "As we look to optimize our investments in IT, an important priority is our use of green technologies like server virtualization, and our energy-efficient data center heating and power systems to help optimize the efficiency of our solutions."

Toward that end, the firm is aggressively deploying virtual server technology. Its server farm is about 60% virtualized, which saves more than $1 million per year compared with a nonvirtualized environment. And with the IT department's leadership, KPMG is installing solar panels at its Montvale, N.J., campus, a project the company expects to complete this month.

Another IT-related effort is Green Travel Advisor, which was created in 2010 to encourage alternatives to travel. In its first year, the program achieved more than $2 million in travel cost savings, partly due to a 95% increase in the use of telepresence technology.

The green-IT efforts are part of KPMG's Living Green initiative, a program to encourage employees to adopt an environmentally responsible attitude at work, at home and in the community.

With Living Green, KPMG is focused on achieving measurable goals, such as a 25% reduction in carbon footprint, a 15% reduction in paper consumption and Leadership in Energy and Environmental Design (LEED) certification for all newly constructed buildings.

"We're pleased with our Living Green results," says Steve Clemente, KPMG's principal in charge of operations services. "Living Green is a major pillar of our corporate responsibility agenda, and we're committed to affecting change in our business operations to minimize the firm's environmental profile, educating our people on sustainable behaviors, and continuing to focus on environmental stewardship in the communities where we operate." ◆

Violino *is a freelance writer in Massapequa Park, N.Y. You can reach him at bviolino@optonline.net.*

GREEN TOMORROW

Having completed the initial three-year phase of its Living Green initiative, KPMG is working to set a new, aggressive five-year goal to reduce its overall carbon footprint. The firm will escalate existing and newly implemented programs, such as a move to cloud computing, green energy procurement, flexible work arrangements, server virtualization and the use of virtual communications technologies to reduce air travel.

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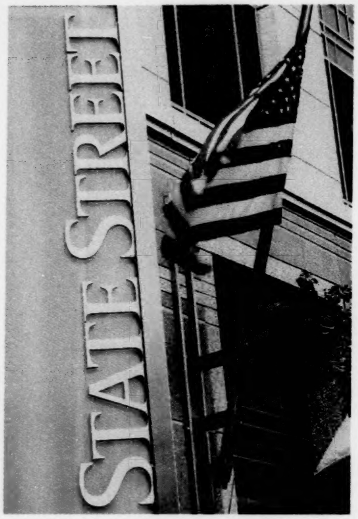


BRIAN SNYDER / REUTERS

» State Street's Boston headquarters.

3

State Street

Using technology to reduce costs and save energy is part of every IT staffer's job at this finance firm.

BY MARY K. PRATT

THE IT DEPARTMENT at State Street has spent the past decade making its operations more energy efficient as part of an overall commitment to environmental stewardship at the financial services firm. But Madge Meyer, executive vice president, chief innovation officer and technology fellow, says the task is never truly finished. "We have a very mature program, so a part of our mission is to continue to drive down energy use," she says.

> **GREEN TOMORROW**
>
> **"We have got to be even more aggressive in getting to the next level because the world isn't getting more of these natural resources," says Madge Meyer, a State Street executive vice president. She says the firm will continue to benchmark against evolving industry standards to ensure that it's at the leading edge of sustainability efforts.**

All employees are aware of the company's sustainability goals and are expected to do their parts, Meyer says, adding that she can count on her colleagues and the entire IT staff to get the job done.

"It's so much in people's minds," she says. "It's not even one person or one group. It's every person in IT, starting with our CIO, all my colleagues — everybody. It's in our IT team's DNA."

Meyer says that in the past year, IT has focused on several areas to cut down on the energy used by technology.

For instance, IT deployed compression and deduplication technologies to reduce storage use by 40% to 50%. It also pushed ahead with a multiyear virtualization program, moving beyond server and network virtualization into virtualizing desktops to further drive energy savings, Meyer says.

In addition, IT implemented processing on demand, an infrastructure as a service that provides capacity only when needed, thereby saving energy when capacity isn't required. "We can pack a lot more workload on fewer machines," she notes.

Meanwhile, IT's use of a private cloud is similarly advancing the firm's green objectives; it has resulted in a 5-to-1 reduction in hardware, Meyer says. ◆

Pratt *is a* Computerworld *contributing writer in Waltham, Mass. Contact her at marykpratt@verizon.net.*

4

Allstate Insurance

Smart ideas that promise savings get a quick green light at this insurance provider.

BY BOB VIOLINO

ALLSTATE INSURANCE has been pursuing energy-saving initiatives for several years, and it has seen a cumulative energy reduction of about 40% through more efficient data center operations and the use of virtualization, according to Anthony Abbattista, senior vice president of technology solutions.

The Northbrook, Ill.-based insurance provider uses a business-case approach to deploying various energy-saving projects concurrently, Abbattista says. "If an idea made sense and had the right fiscal savings model, we implemented it," he says.

Promoters of greener data center operations use business cases to persuade Allstate's real estate group and the rest of the company "to get behind our actions," Abbattista says. "We are a collection of socially conscious engineers and business people who have passion for doing things green."

Over the past 18 months, Allstate has made significant progress in its green data center effort, which consolidated the company's four data centers into two. Combining eco-friendly construction with energy-efficient operations, a new data

CHRIS LAKE

» Shown here with Mayor Chet Olson (second from right) at the Allstate data center in Rochelle, Ill., are IT staffers Ken Alberts, Brandi Landreth, Peter Corrigan, Sandy Figurski, Anthony Abbattista and Cathy Brune.

center in Rochelle, Ill., received LEED Gold certification in 2010.

By constructing an energy-efficient data center, virtualizing its server environment and replacing older equipment with more energy-efficient hardware, Allstate has significantly reduced its carbon footprint and future energy demand. The company considers energy efficiency in all of its hardware purchasing decisions, and constantly monitors energy consumption and efficiency while finding new opportunities to further reduce demand through virtualization and by retiring older, less efficient hardware.

The decommissioning of the company's last remaining legacy data center was completed in November 2010, and over the past 18 months, there has been a net reduction of nearly 3,000 servers or devices.

Allstate is placing greater emphasis on energy efficiency through efforts to limit the growth of electricity usage. Recently, the company began a series of upgrades to more energy-efficient systems. It's also switching from physical tape to virtual tape and to storage systems that need less hardware than older systems.

In addition, the company is continually expanding its Web technology capabilities to significantly reduce travel between offices — not only locally, but nationwide as well. Large Allstate events are now broadcast via streaming video, allowing employees to view events live from any PC with an Internet connection. For most daily meetings, conference bridges and webconferencing capabilities, including videoconferencing, are enabled so that remote employees can participate. ◆

GREEN TOMORROW

Allstate is in the early stages of an enterprisewide initiative in which it will transition from an IT setup where processing and data storage is distributed and managed across PCs to a model where a consolidated cloud resides in data centers and is securely accessible from any location.

The company's objective is to simplify the client computing environment to make it more energy efficient and cut costs.

5

NBC Universal

Tightening budgets helped drive support for an **ambitious, money-saving virtualization project.**

BY ROBERT L. MITCHELL

NBC UNIVERSAL had no room to expand its West Coast data center, located on the Universal City lot in Los Angeles. So Dan Johnson, senior vice president of platform technology, and his team recycled it. The data center refurbishing project, which CIO Christopher Furst refers to as "converting a brownfield," virtualized 60% of the physical servers and shut down 2,000 physical machines.

The new data center uses cold containment aisles and a fiber topology that replaced 300,000 feet of copper cable and moved the cable plant overhead, rather than under raised floors. NBC also implemented smart power distribution units and rack-level environmental and power metering sensors, increasing rack densities by as much as 200%. "It's a very modular design," says Johnson. The setup makes it easier to scale the data center efficiently by adding a row at a time. "Before, that was kind of tricky," he says.

In total, the company retired and recycled 47 tons of hardware and cut power

GREEN TOMORROW

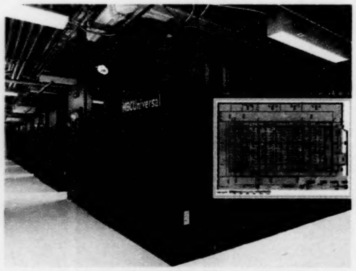
NBC Universal is working to expand server virtualization by another 12%, and to virtualize other layers in the technology stack, including PCs. "We're looking for consolidation strategies in a broader footprint," says CIO Christopher Furst. That includes cutting the number of data filers by 62% by deduplicating and aggregating data into larger, more-efficient devices.

consumption by 11%, says Beth Colleton, vice president of Green Is Universal, the companywide sustainability initiative.

The recession has actually helped Furst get support for the virtualization strategy, because the effort has yielded hard cost savings and makes the business more agile. "I always tell people to never waste a crisis," he says. Furst's team also sold the business on a multisite telepresence system that cuts staff travel costs and carbon emissions.

But for Johnson, the best part was the six-figure rebate check that arrived one day from utility company PG&E as a reward for increasing efficiency and reducing power consumption in the new data center. "For a $19 billion company, that's not a lot," he says. "But it was the highlight of my career."

Furst credits the team for continuing to push the envelope. "It's hard work," he says. "There's no silver bullet. It's something you have to work on every day." ◆



» One of NBC Universal's data centers uses cold containment aisles. A monitoring system (inset) tracks thermal conditions within the facilities.

BAKER HUGHES

BRIAN K. FALCON / BAKER HUGHES

» Green-IT team members (from left): Donnie Forehand, Tom Gardosik, Graham Crisp, Karen Lane, Eva Royer and Ivan Skerl.

6

Baker Hughes

Green-IT initiatives are part and parcel of this energy company's IT strategy.

BY BOB VIOLINO

BAKER HUGHES, a provider of oil and gas services, has made energy consumption a major factor in its decision-making processes.

The company's green-IT strategy consists of four major components: awareness (measuring and reviewing energy consumption), planning (exploring opportunities to reduce energy consumption and environmental waste for each new investment), harvesting (reviewing current practices for opportunities to save money through conservation), and prevention (looking at current practices and taking proactive steps to avoid unnecessary increases in power consumption or the introduction of environmental waste).

"We consider the energy and other environmental impacts of our projects and seek ways to reduce the impact," says Clif Triplett, vice president and CIO at the Houston-based company.

Energy reduction is woven into Baker Hughes' internal IT strategies, and energy management is a key part of all standard operating practices, project architectures and design reviews. "Success in energy management is celebrated and discussed with the entire organization," says Triplett.

Baker Hughes created a high-performance computing (HPC) cluster that incorporates wake-on-LAN technology. In this environment, machines are turned on — or "woken up" — via a network message, and the company can wake up machines for use in the HPC cluster as needed. This setup uses 40% less energy than a dedicated HPC pool.

In its infrastructure operations, the

company is committed to the Information Technology Infrastructure Library (ITIL) framework for operations and has developed an internal assessment program for compliance and best practices identification. The program, built on the ITIL framework, was expanded to include a dedicated section on green best practices that pertain to energy consumption and the handling and minimization of waste, Triplett says.

Baker Hughes is making a big push toward cloud computing and specifically infrastructure as a service, which is expected to contribute to additional energy savings. It's also rolling out managed print services globally and removing personal printers and fax machines from offices, replacing them with energy-efficient multifunction devices, says Graham Crisp, director of IT supplier and asset management at the company.

Among those driving green efforts at Baker Hughes are the CEO and chief operating officer. "They set the tone from the top," Triplett says. "They are strong advocates of protecting the environment and supportive of investments that focus on energy consumption and waste mitigation."

Others who are heavily involved include Triplett, who drives the green culture into the daily work practices of the IT organization; the vice president of health, safety and environment, who provides strong support and awareness of activities that advance the commitment to the health and safety of employees and the environment; and product-line general managers. ◆

GREEN TOMORROW

Baker Hughes plans to move more applications to energy-efficient hosted environments and will continue to deploy software and hardware that use less energy. The company will also encourage its strategic IT suppliers to participate in its green initiatives.

7

Northrop Grumman

This defense firm emphasizes sustainability, and the IT team plays a pivotal role.

BY MARY K. PRATT

NORTHROP GRUMMAN set an important environmental goal in 2010: to reduce its greenhouse gas emissions by about 25% over the next five years. And IT will play a key role in getting there. "IT is a large consumer of power, equipment and consumables, and as such, IT will continue to be a focus in our company's sustainability [efforts]," says Brad Furukawa, vice president and chief technology officer.

The technology staff at the Falls Church, Va.-based aerospace and defense company has focused on such issues since announcing its "greeNG" sustainability program in 2008, and it launched several important green initiatives last year.

Its desktop program, for example, calls for deploying PCs, laptops and peripherals that are ranked either Gold or Silver by the Electronic Product Environmental Assessment Tool. It also implemented desktop power management to automatically put its PCs, laptops and monitors into lower power states when not in use — a program that will be deployed enterprisewide by the end of 2012.

And IT started a data center consolidation program, moving more than 100 server rooms and major data centers to three enterprise data centers. This

BOB BROWN

» Green-IT staffers (from left): Steve Stagnaro, Paul Kang, Larry Frick and Brad Furukawa.

GREEN TOMORROW

"In order to find additional energy-efficiency opportunities, we believe that the IT and facilities organizations will need to collaborate in the use of energy management technology, such as HVAC systems, among the campuses. Integrating these systems together and standardizing will help improve our overall energy management," says Brad Furukawa, vice president and CTO at Northrop Grumman.

effort could lead to the elimination of more than 26 million pounds of carbon dioxide emissions annually. Similarly, IT is virtualizing or retiring approximately 3,000 servers, which will cut the company's server environment by 80%.

"Our energy strategies are integrated into our architecture guidance and processes," Furukawa says. "Utilizing technologies that address environmental impact, such as virtualization, and incorporating them into our architecture tenets and enterprise standards, we are able to integrate and drive our strategy down to our system architects and engineers in the design and development of our solutions."

To that end, Furukawa's staff has provided a range of tools to enable the entire organization to better understand the company's environmental impact. IT deployed the ENX Suite greenhouse gas accounting system to track emissions and is integrating an energy management system with the tool. IT has also set up an internal wiki and other collaborative spaces where employees can share information on their green efforts.

IT leadership is also looking at replacing conventional desktops with more power-efficient thin-client devices and building private cloud computing capabilities. Virtualized servers, virtual desktops and virtual firewall technology require less energy than conventional computing environments. ◆

REENA PELC

» Citi's global data center team. Seated: Tony DiSanto and Teresa Purcell. Standing from left: Mike Styles, Genevieve Schimpfle, Harvey Cobbold, Ramon Karingal and Arturo Grapa.

8

Citigroup

A push to close data centers has exceeded goals and helped lower energy costs at this financial giant.

BY BOB VIOLINO

NEW YORK-BASED financial services firm Citigroup began a strategic data center transformation in 2005, with the goal of reducing its data centers from

PAULKHOR / FLICKR

» Citigroup's New York headquarters.

68 to 24 by the end of 2010. Citi not only met that goal, but exceeded it by cutting down to 22 data centers.

All of the Citi data centers are designed with energy efficiency as a priority. For example, Citi's newly constructed data center in Georgetown, Texas, uses 800 kilowatts less power than conventional data centers with the same footprint, for a 30% reduction in energy costs. The facility also emits less carbon and consumes less water.

Other green-IT efforts include a desktop standardization initiative that has simplified and standardized Citi's global desktop environment of more than 260,000 PCs and laptops. The result is an incremental $6 million per year in energy savings and a 3% reduction in carbon footprint.

The company's policy requires that all new servers be virtual, unless physical

Continued on page 28

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Continued from page 26

servers are justified, reducing power and cooling requirements by 73%.

Citi's North America Client Computing Technology Asset Management group, formed in 2008, processes more than 80,000 "disposals" annually. Citi works only with vendors that have a "zero landfill disposal" policy.

In 2010, e-waste recycling generated more than $800,000 in remunerations from the recovery work.

Last year, Citi also launched the One Megawatt Challenge to change the traditional server access connectivity in data centers to network switches.

The company estimates it can reduce the need for copper wiring by as much as 80%, reduce its computing footprint by as much as 50% and potentially reduce the number of racks needed. With fewer cables running under the raised floor, the air used to cool the equipment will be able to flow more freely, further reducing energy consumption and costs.

By making an explicit commitment in 2007 to reduce greenhouse gas emissions, Citi was one of the first global financial services companies to publicly join the fight to slow climate change and reduce energy dependence.

"I can't emphasize enough that sustainable IT is about smart and strategic approaches to achieving operational excellence," says Michelle Erickson, director of the sustainability and research initiative in Citi's Global Operations and Technology unit. "A well-run and efficient organization is a green organization." ◆

GREEN TOMORROW

Citi's Digital Delivery program puts traditional consumer operations into a digital environment in support of the company's digital banking strategy. The program will be piloted across all regions in a variety of banking activities, including new accounts, payments, e-statements, fraud, security closures, billing disputes and marketing.

9

Nixon Peabody

The IT team at this law firm centralized its data center and even got lawyers to curb their paper habits.

BY MARY K. PRATT

BOSTON-BASED LAW FIRM Nixon Peabody has elevated its focus on sustainability to the highest corporate level. A chief sustainability officer and a Green Operations Steering Committee lead green initiatives throughout the organization, and IT spearheads and enables much of the work.

"It was pushed down, and we embraced it," says CIO Mike Green. "Like everything we do in the firm, with the environmental programs, we want to help."

To that end, the IT department has centralized the firm's data centers, consolidated its storage assets and virtualized its servers, going from 300 physical servers to 30 VMware ESX servers, all located in its primary data center. The effort cut power consumption by approximately 30%.

The firm's technology department also spent $30,000 to retrofit printers as part of its best practices for office paper management, converting nearly all printers to double-sided printing by default. Moreover, the firm encourages its employees to keep documents in an electronic form instead of printing them out. As a result, paper usage has dropped by 15%, saving an average of 120 cartons — or 600,000 sheets — of paper every month.

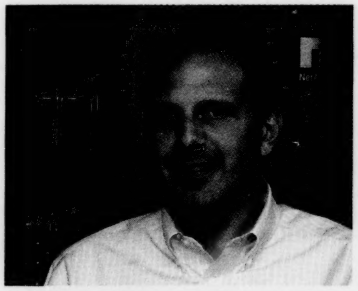
GREEN TOMORROW

Nixon Peabody CIO Mike Green says he expects vendors to keep creating technologies that will help user organizations continue to pursue green initiatives. "Going forward is a little more challenging, but there will be technologies that will come along to help," he says.

"It took time to communicate and get everyone comfortable with this," says Jim Passantino, director of local IT operations in Rochester, N.Y., and a member of the firm's Legally Green Team. But the firm's lawyers, whose jobs have traditionally focused on producing paper documents, were convinced by IT-driven metrics that showed the significant savings.

Meanwhile, the IT team is replacing old storage tools with new, high-efficiency systems, a move that is expected to cut storage-related power and cooling needs by an additional 25%, says John Roman, director of IT operations.

IT is also in the process of replacing more than 1,100 monitors with Energy Star-rated LCD units, which should cut monitor power consumption by 40%. ◆



» Jim Passantino, director of local IT operations in Rochester, N.Y., says IT-driven metrics persuaded Nixon Peabody lawyers to start using a new paper management system.

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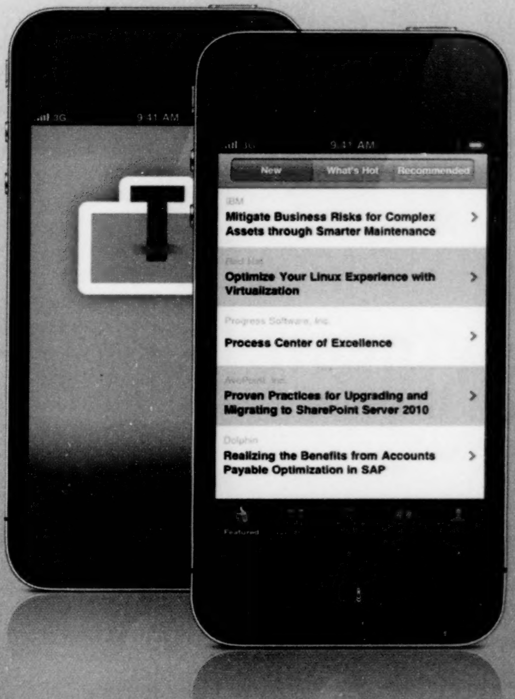

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» Raytheon's Brian Moore expects energy-saving efforts to "add up."

10

Raytheon

Developing best practices across the organization has helped this defense contractor slash energy use.

BY MARY K. PRATT

[redacted]

AS THE IT SUSTAINABILITY program lead at Raytheon, Brian Moore says he saw a chance to learn from the company's past successes to find ways to deliver even more results.

For Moore and his colleagues in IT, that meant taking cues from Raytheon's efforts to improve data center energy efficiency and applying those steps to other areas. Toward that end, the IT team has focused on the company's networking and telecommunications infrastructure for the past year.

GREEN TOMORROW

"IT will continue to lead the company in reductions to our own footprint, but the largest opportunities lie outside IT," says Raytheon CIO Rebecca Rhoads. "We are partnering with other enterprise functions on secure, smart buildings; energy and water management systems; carbon emissions reporting; and other efficiencies."

"The corporate network guys run the wide-area network and the backbone, so they can do it top-down, focusing on the design of the gear," he says.

Moore says Raytheon, a defense and aerospace company based in Waltham, Mass., has also spent the past year building up its cloud computing capabilities — leading to a reduction in hardware requirements and therefore energy needs — as well as replacing older equipment with new, highly energy-efficient machines. The company is still calculating how much energy will be saved. "We think it's going to add up," he says.

Similarly, systems engineer Clark H. Young, IT sustainability lead for Raytheon Missile Systems, says he and his colleagues are building on the data center's use of hot and cold rows and virtualization to drive down energy consumption elsewhere.

In a successful test of an energy-saving strategy in 16 of the 150 telecommunications closets at the Tucson, Ariz., campus, he says, IT cut energy use in each closet by 30% when it raised the temperature by 10 degrees Fahrenheit to 75 degrees — well within the range that vendors recommend.

Now IT is looking at ways to better vent hot air and, when space allows, establish hot and cold aisles to further cut back on cooling needs, Young says. Meanwhile, he adds, IT is continuing to virtualize servers. As of the end of 2010, this work yielded $23 million in annual savings. ◆

11

Prudential Financial

With green standards well established, this financial firm turns to mobile devices, e-faxing and more.

BY MARY K. PRATT

[redacted]

WHEN MARY O'MALLEY became Prudential's environmental task force chairperson in 2007, she found that the company's IT department was already focused on being green.

"A lot of their work was focusing on facilities, renewable energy investments and employee volunteer efforts around conservation and stewardship," says O'Malley, vice president of local initiatives at Prudential Financial.

Prudential's technology folks have accomplished much more since then, and in the past year, IT has continued to lead projects that yield green benefits.

For example, IT is working to virtualize the company's data centers, shifting approximately 1,000 servers into a virtual environment last year. Prudential officials expect more servers to be virtualized as the project moves ahead.

IT has also focused on using alternative energy sources for its data centers. It is working with the facilities team to

Continued on page 32

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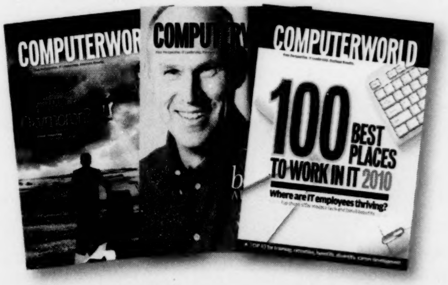
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» Solar panels provide a portion of the power needed to run Prudential's Roseland, N.J., data center.

Continued from page 30

install solar panels to provide some of the power needed to run its Roseland, N.J., data center, a project that is expected to be completed this year.

Meanwhile, IT has spread the word about sustainability throughout the organization. Employees have responded by significantly reducing the amount of paper they use for printing.

"We've been pushing toward a paperless world," says Jeff Harrington, a vice president in the IT group. He says IT has provided alternatives, such as e-fax systems and printing applications that help users find ways to minimize their page count when they do need to print.

In addition, IT has helped employees take advantage of electronic tools when communicating with one another and with customers, O'Malley says.

Harrington says additional IT efforts to reduce the use of power and other resources include expanding the deployment of mobile devices, providing support for telecommuting and investing in telecommunications equipment.

Michael Mandelbaum, also a vice president in the IT group, points to IT's deployment of cart-based videoconferencing equipment that can be moved from room to room.

The introduction of these mobile units has led to an increase in the use of videoconferencing for meetings because employees have found that using the carts is easier than booking meetings in specially equipped conference rooms.

Mandelbaum says the IT team focuses on delivering the technology that people need to do their jobs, while at the same time meeting Prudential's fiscal goals and green objectives. That's key to getting support for green IT, he says.

"You have to base decisions on economics and functionality to be green," says Mandelbaum. "That's how we approach everything, which means we can continue to do better because we can point to a track record of serving the shareholders while serving the broader community through sustainability." ◆

GREEN TOMORROW

"In terms of our overall environmental stewardship, we're looking at continuing to manage what we're doing," says Mary O'Malley, vice president of local initiatives and chairperson of Prudential's environmental task force. She says company officials are working with environmental leaders, such as the Environmental Protection Agency and the Rainforest Alliance, to learn best practices.

12

JM Family

A systematic approach to sustainability includes a high-powered solar array.

BY MARY K. PRATT

THE IT SHOP at JM Family Enterprises has taken the typical steps to make its data centers eco-friendly: It has consolidated systems, virtualized servers and set up hot and cold aisles to drive down energy consumption.

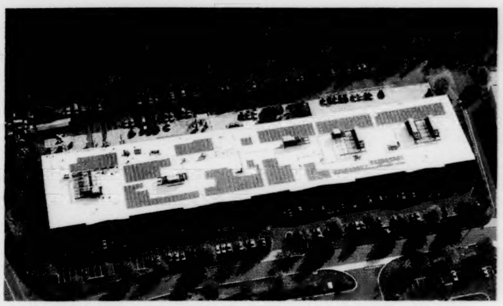
Such initiatives have enabled the widely diversified Deerfield Beach, Fla.-based automotive services company to eliminate more than 1,400 physical servers and avoid using more than 5.5 million kilowatt-hours of electricity annually over the past several years.

But IT leaders thought they could do more, so they invested in alternative energy, installing a solar energy array at the company's Alpharetta, Ga., data center. The array is capable of supporting 100% of the data center's power requirements and eliminating an annual release of 205 metric tons of carbon dioxide.

The switch to solar is one of many sustainability initiatives that the company's IT unit has undertaken.

Vice President and CTO Shawn Berg says IT has been actively involved in such projects since 2006, when it first started to virtualize data center servers.

"We've always focused on community



» The rooftop solar array at JM Family's Alpharetta, Ga., data center can support 100% of the facility's power needs.

and the environment; they were core issues for us," Berg says.

Virtualization, which has been an ongoing, multiyear effort, was IT's initial step toward a more formal, systematic approach to sustainability that the company adopted in 2008, Berg says.

In addition to virtualizing servers, the IT department has adhered to a rigid equipment refresh cycle to ensure that the company uses the latest, most energy-efficient systems. And the Georgia data center, built in 2009, has many green features in addition to its solar array.

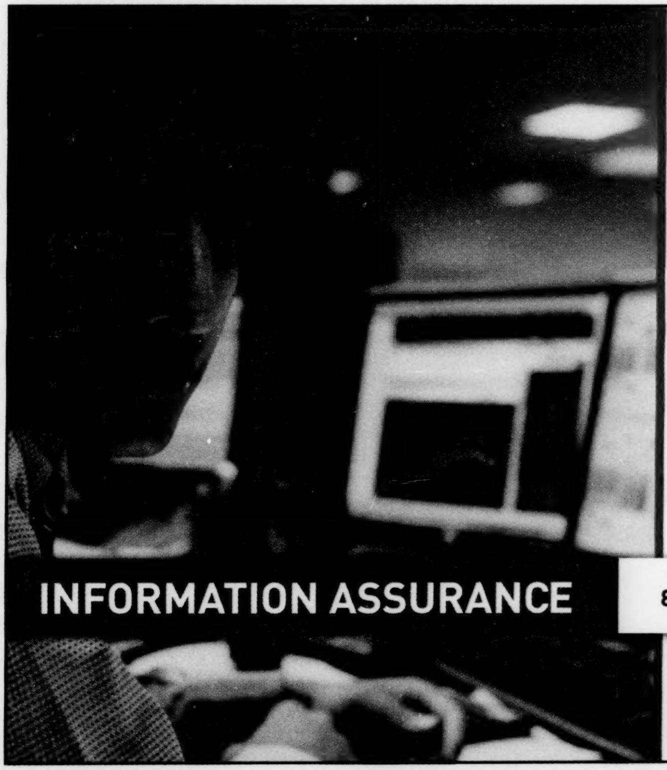
Now the IT department is focused on adopting green efforts in other areas, Berg says. This year, JM Family started a virtual desktop project under which IT aims to eventually provide all employees with virtual desktops. This will help cut down on the amount of e-waste the company generates and reduce energy consumption. JM Family estimates that the thin clients will use 80% less energy than traditional PCs.

IT also helped implement a print reduction initiative this year, Berg says. The goal is to cut paper consumption by 12,000 pounds per year.

And in an effort to further reduce its impact on the environment, Berg says, JM Family is looking at the possibility of sharing data center space with other companies. ◆

GREEN TOMORROW

"JM Family is committed to being environmentally sustainable in the near term and the long term," says Shawn Berg, vice president and CTO. "We're focusing on the renewable energy area and demonstrating our commitment to our associates and the communities we work in."



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OPINION

CANDACE LABELLE

How CIOs Can Curb the Vexing E-Waste Problem

> Discarded electronic devices are releasing toxic materials into our land, water and air.

MANY HAVE SEEN IT: that picture of a small child playing in a heap of discarded metal scraps and wires in a Third World country. Images such as these have raised awareness about a fact of life in the computer era that's tainting corporate brands and creating a huge environmental problem: electronic waste.

From cellphones to servers, electronics discarded due to real or perceived technological obsolescence are a mounting concern around the world. Why? In part, it's because millions of devices, developed with large investments of energy and natural resources, are finding their way into landfills that are not equipped to deal with the hazardous materials used in electronics. Discarded electronics not only represent missed opportunities for recycling precious metals (ferrous metal, aluminum, copper); they also release toxic materials (mercury, cadmium, lead) into our land, water and air.

What role does a CIO play in controlling e-waste? CIOs manage or heavily influence many areas of the business that play a role in the disposal of electronic equipment.

- **E-waste policies.** CIOs are often responsible for IT purchases and life-cycle management. With effective policies at all stages of an asset's life cycle, they can minimize and manage e-waste.

- **Purchases.** When making IT purchases, up-front consideration of how disposal of those products will be managed can help reduce e-waste and cut handling costs. Not all assets are created equally. Some have reusable or recyclable components, some contain more hazardous materials than others, and some are covered by return programs under which the manufacturer assumes responsibility for appropriate disposal.

- **Reduce.** One way to reduce e-waste is to reduce consumption. By adopting purchase policies with longevity in mind, CIOs can extend asset life cycles by simply using equipment longer.

- **Reuse.** Purchases that allow mixing and matching of components — for example, power cables, hard disks and peripherals — can maximize equipment reuse, extend life cycles and reduce e-waste. The more unique a piece is, the less likely it is to be upgraded or widely compatible and reusable with other equipment.

- **Recycle.** Despite efforts to reduce consumption and reuse equipment, most electronics will still require disposal. A comprehensive e-waste policy should address recycling of products whose manufacturers don't have take-back programs.

CIOs can contract with companies that collect surplus equipment, follow secure data-wiping processes, refurbish equipment (if possible), disassemble electronics to recover precious metals and recyclable materials, and appropriately handle hazardous waste and minimize landfill.

- **Community outreach.** Stepping away from the supply chain, there are opportunities to reduce e-waste with the side benefit of improving your company's image.

CIOs can use their influence to reach out to employees and members of their communities and educate them about the need for waste reduction. Employees can play a big role by thinking about ways to reduce e-waste at all stages of the asset life cycle, including initial requests for equipment and all phases of use and maintenance.

By stepping out front, CIOs can minimize future headaches as well as potential fines and bruises to the company's reputation, all while helping to clean up the planet and potentially make a contribution to the bottom line. ◆

Candace Labelle is program director at CSC GreenWay, a technology services company. You can contact her at clabelle@csc.com or visit www.csc.com/greenway.

How We Determined the Winners

FOR THE FOURTH YEAR in a row, *Computerworld* set out to identify organizations that are implementing smart, efficient strategies to achieve "green IT."

Organizations were invited to complete a comprehensive questionnaire online between June and August. The survey was sent out to the IT community through a variety of channels, including email newsletters, *Computerworld.com* and email broadcasts. Seventy organizations participated.

Computerworld then contacted representatives at each participating organization to verify that the information provided on the surveys was truthful and accurate. Only those organizations that filed verification letters were considered.

Computerworld then applied a set of criteria, developed with the help of green-IT industry experts, to identify the organizations that are working to reduce energy consumption by IT equipment and using technology to conserve energy and lower their carbon emissions. A separate list was created to showcase IT vendors and data center suppliers; included in that category are hardware, software, networking, IT infrastructure and data center vendors.

Based on a weighting scheme that was developed, the top 12 green-IT users and top 12 green-IT vendors were chosen.

What follows is a sampling of criteria from the survey that *Computerworld* used to select the "greenest" companies.

TOP LEVEL

☐ Top executives (e.g., CEO) have made an explicit, vigorous commitment to energy efficiency.

☐ Organization has set and published goals for energy efficiency, energy savings and/or carbon reduction.

☐ Organization has a green-IT expert or experts on staff (within or outside the IT department) dedicated to developing and monitoring green-IT practices for the organization as a whole.

☐ Organization has fine-tuned its data retention policies to lower storage volume.

MONITORING AND MEASURING

☐ IT managers see and analyze electric utility bills.

☐ IT managers have a program in place to lower electric utility bills.

☐ The IT and facilities departments have teamed up to reduce IT electricity bills.

☐ Organization measures electricity consumption for IT equipment and for data center infrastructure.

☐ Organization has performed an audit/assessment of IT and data center power consumption.

☐ Organization has systems or sensors in place to monitor temperatures in the data center.

EMPLOYEE PRACTICES/ RECYCLING

☐ Organization has a program to recycle unused/discarded high-tech equipment (e.g., old PCs and monitors).

☐ Organization has a program to recycle technology-related consumables (e.g., printer cartridges and printer paper).

☐ Organization explicitly encourages telecommuting and provides the necessary equipment and support.

☐ Organization mandates the use of videoconferencing, or has cut travel budgets to force increased usage of videoconferencing.

☐ Organization uses thin clients, or plans to replace desktop PCs with thin clients.

FACILITIES/DATA CENTER

☐ Organization has installed energy-efficient HVAC and building automation controls.

☐ Organization uses power management software.

☐ Organization has reduced IT equipment energy consumption by at least 5% in the past 12 months.

☐ Organization has improved IT equipment energy efficiency by at least 5% in the past 12 months.

ESSAYS

Respondents were also asked to describe their organization's efforts in the past 18 months to reduce the consumption of energy (especially energy derived from fossil fuels) by information systems, as well as their technology-related recycling programs and IT support for telecommuting. ◆

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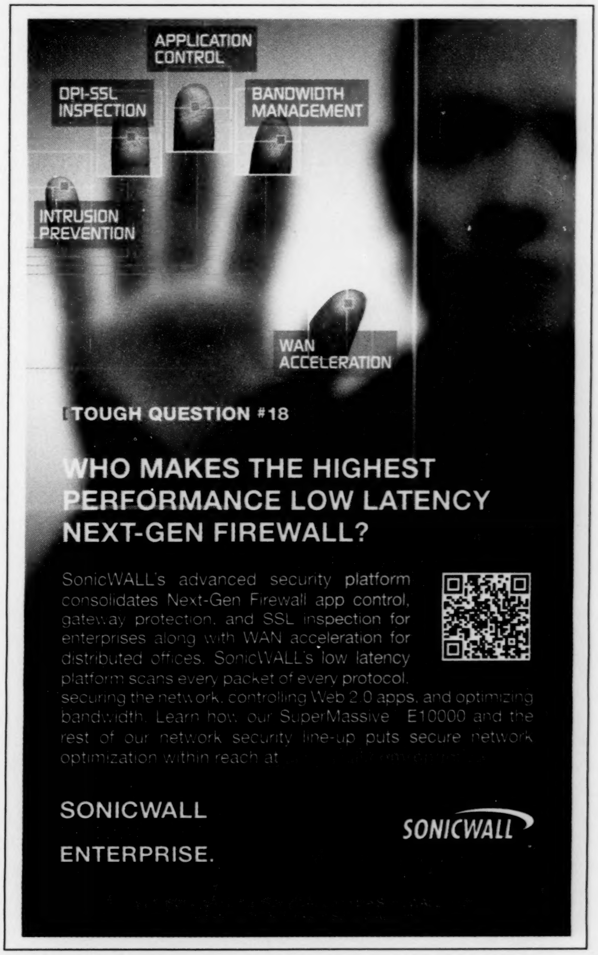

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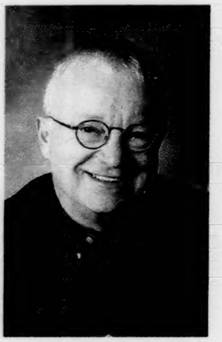

William Lutz

The Rutgers emeritus English professor *and former editor of the* Quarterly Review of Doublespeak *wants language accountability.*

What are some of the most egregious examples of doublespeak you have encountered in the business world lately? There are many. For example, a pharmaceutical company used the term "emotional liability" to describe a side effect of a new antidepressant. The emotional liability in question? Some patients using the drug had attempted suicide. But there are many other examples. [See box.]

Why does this kind of language so often creep into business? The basis of all management is language. Effective managers are experts at using language to get their message through. The great danger is working in a closed environment, such as IT, where there's the erroneous assumption that everyone understands everyone else's vocabulary. Good managers never assume that everyone understands what's being said. Good managers avoid jargon [and] pompous or inflated language, and understand that the function of language is not to impress but to express, not to hide or evade but to reveal and confront. Good managers focus on simple, clear, direct language to get the job done.

What are people doing when they speak deceptively? People use such language for a variety of reasons. They may want to hide what's really happening ("negative profits") or make something appear more important than it is ("global leader in interior experience"). As George Orwell wrote, "The great enemy of clear language is insincerity," which occurs "when there is a gap between one's real and one's declared aims."

Do you have ideas about how people can be weaned off that kind of language and be more direct? People will use this language as long as they can get away with it. So, let's call them on it when they use it. Let's point out how ridiculous it is; let's laugh at them for using it; let's demand language accountability.

– JAMIE ECKLE

TRANSLATING DOUBLESPEAK

NASA once issued a stricture against astronauts sharing "undue preferential treatment." What does that mean? "No sex allowed on the space station," says doublespeak expert William Lutz. **Here are some other examples he has culled, mostly from the world of business:**

DOUBLESPEAK	PLAIN ENGLISH
negative debt	cash
negative growth	loss
negative deficit	profit
thermal management systems and components	thermostats
a global leader in interior experience	we sell a lot of thermostats
thermal event	fire
state-of-the-art sound-processing tool	earphones
bus maintenance technician	bus mechanic
optical illuminator enhancer	window cleaner
director of first impressions	receptionist
pretailored to your measurements	ready to wear
house manager	butler
sparkling beverage	soda
pretexting	lying
wage management initiatives	layoffs
pre-retirement activities	work
using an expedited, court-supervised process to accelerate the reinvention of our company	filing for bankruptcy

A Back Channel for Employer Info

ONE FRUSTRATING ASPECT of job hunting (though not as frustrating as those times when you aren't getting any responses to your résumé) is the difficulty of gauging a prospective employer's work environment. Interviewers try to make the job as appealing as possible, so they're apt to put a positive spin on all of their answers.

Into this breach rides CareerBliss.com, with a new section of its website called Company Q&A. The point of Company Q&A is to provide a forum where employees from every imaginable company, large or small, can be anonymously queried about the real skinny on various aspects of their work environment. You can ask about a company's culture, salaries, work/life balance or anything else that you want to understand better.

But couldn't such an anonymous forum be co-opted by HR people or others who have an interest in painting a rosy picture? CareerBliss says it vets participants through verified employment information that remains confidential.

– JAMIE ECKLE

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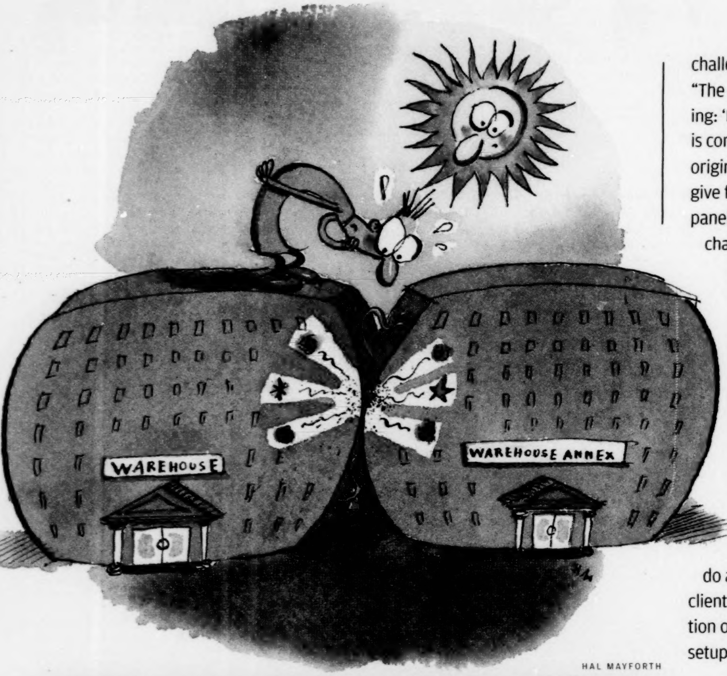

HAL MAYFORTH

Squeeze Play

This discount chain store has a local warehouse with a networking problem. "The warehouse was actually two separate buildings, built right next to each other with their outside walls practically touching," reports a pilot fish in the know. "The customer had a long-standing intermittent network problem: During the summer, when it was especially hot outside, the network would go down. Then in the evening, the network would start working again. After all the heavy-hitter support engineers walked away scratching their heads, a field engineer I knew discovered what was causing the problem: A network cable had been routed between the outside walls of the two buildings. The buildings expanded slightly during the heat of the day, squeezing the cable and causing it to short out. In the cool of the evening, the buildings contracted, the short circuit went away, and the network started working again. Rerouting the cable fixed the problem."

Unclear on the Whole 'Push' Concept

This IT pilot fish really appreciates software installations that can be pushed out to users over the network so that techs don't have to physically touch each workstation. "However, I just got an email from an antivirus vendor titled 'Minimum Push Installation Requirements, Windows 7,' which challenges that concept," fish says. "The directions start out with a warning: 'Important: Once deployment is complete, you must restore your original settings,' then proceeds to give five steps – going to the control panel and starting these services, changing network settings, firewall settings, UAC controls, etc. Then once those steps are completed, you can push the software from the server to the client. And then you have to go back to the workstation and undo those first five steps to put the security settings back to an acceptable level. But the best was the last line: 'If that fails, you can do a manual install by going to the client, browsing to the update location on the server, and then running setup.exe.'"

I Spy

As this IT pilot fish finishes the setup for a new employee's PC by explaining that the new user can change the passwords at his leisure, the new hire mentions that he's been fired before – for industrial espionage. "Why on earth would my organization knowingly employ someone who had been dismissed from a previous job for industrial espionage?" asks fish. "It turns out that the incident of 'industrial espionage' was changing his password. And no amount of reasoning with his then-employer could convince him that this was actually a good thing and not an attempt to defraud the company."

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Diana Turco
Circulation Manager

OPINION

SCOT FINNIE

Steve Jobs' Indelible Mark

> Steve Jobs died at the highest point (so far) of his company's success. But what does the future hold?

STEVE JOBS HAD UNPARALLELED FORESIGHT and the will to make his ideas come to life. Will there ever be another visionary who has anything close to the impact that Apple's co-founder had on consumer technologies?

In recent years, Apple's sphere of influence expanded by millions of users worldwide, confirming Jobs' vision after years of the company being marginalized by weak market share.

Ultimately, Jobs' stubbornly held convictions about how people should use computers and other devices prevailed over the ideas of his competitors and critics. The Mac, OS X, the iPod, the iPhone and the iPad are all success stories. And under Jobs' leadership, Apple got better and better at combining his vision with economic success.

It isn't just end users who have embraced Apple; Wall Street has too. Based on market cap, Apple's valuation has surpassed every other tech company in the U.S. In fact, it has been playing a game of tag with oil giant ExxonMobil for the title of highest valued company in the U.S. No matter what you think of the company's products, you have to tip your hat to Apple's financial might.

Steve Jobs died at the highest point (so far) of his company's success. But what does the future hold? Did Jobs leave behind a company now lacking the critical vision that was instrumental to its success — a company that will be crippled by his death? Or was Jobs the truly superb CEO that many believe him to have been? Did he plan for succession and prepare key members of his staff to carry on for him after his departure?

We're about to find out.

I hope, for the sake of Apple's employees, shareholders and millions of customers, that Jobs was able to rein in his ego — that piece of him that was probably requisite to his ability to stick to his guns on product design and functionality — just enough to do everything he could to make Apple continue on course without him. The man had eight years to come to terms with his impending death and do what needed to be done. Just look at Tim Cook's quick transition to CEO in August. For now, I'm giving Apple the benefit of the doubt.

In recent weeks, I've heard many people speculate that Jobs must have left two or three years' worth of products in the pipeline. They wonder what he had coming, but the implication is that once those Jobs-inspired goodies have been introduced, it's all over. While that's meant to sound laudatory, in a way it sells Jobs' real abilities short.

As great a product visionary as Jobs was, he didn't do it alone. He created a framework of user-focused innovation. He fostered an environment of product design and manufacturing excellence. Most of all, he sought control of the user experience in every possible way to ensure that the experience was positive. Don't for a second think that now that Jobs is gone, that's it, Apple is done. And don't buy into the cynicism that Jobs was the last tech entrepreneur who could innovate. His passing in some ways creates an opportunity for other visionaries.

In one way, Jobs' death marks the end of the era that saw the computer industry's meteoric rise. In another way, it's the fitting end to a fairy-tale story of a man who had both soaring highs and deep lows. In short, Jobs' professional life had an American-dream, truth-is-stranger-than-fiction quality. Even if you weren't an Apple fan or didn't like the man, you probably found yourself rooting for him. After all, for decades he was the underdog, and he proved the naysayers wrong in the end. ◆

Scot Finnie is *Computerworld's* editor in chief. You can contact him at sfinnie@computerworld.com and follow him on Twitter (@ScotFinnie).

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